RATIONAL MEDICINE.

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REMARKS ON THE NARROW LIMITS OF SO-CALLED RATIONAL MEDICINE.

SURGEONS OF ENGLAND

READ BEFORE THE

SOUTH HANTS MEDICO-CHIRURGICAL SOCIETY,

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THE substance of the following pages was read before the SOUTH HANTS MEDICO-CHIRURGICAL SOCIETY, and subsequently published in the "Medical Times and Gazette."

The Members of the Society, however, and others having done me the honor to request that my Remarks might be published in a separate form, I have endeavoured to remedy some of their original defects, and now again offer them for consideration.

J. S. B.

LAVERSTOCK HOUSE ASYLUM, SALISBURY,
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REMARKS,

&c. &c.

To call in question the soundness of the advice offered by those who, in any kind of human undertaking, counsel us to act upon rational principles, may seem a bold proceeding. And bold it would be, were the rational principles suggested fixed in their character, and the occasions proposed for their use so determinate that the results might be with certainty foreseen. But the slightest reflection must make it appear that there are principles—rational in the strictest sense of the term—which are not absolute, but true only within a narrow range; and that there are occasions, the entire character of which is but dimly seen, and where, therefore, if it be assumed that a principle of this kind is applicable to such a case, the principle is rational only in name and appearance; so that the machinery employed, while plausible to a superficial glance, is really capable of affording the most ambiguous and unlooked-for results, Every man, no doubt, is ready to repudiate the idea that on any occasion in which he recommends rational principles, his proposal is to extend a principle beyond its proper range, or to make use of it in a case, the nature of which is not well defined. But a charge is not disproved because it is disclaimed. Is there nothing in the daily experience of the world to demonstrate that in all the practical arts to which men are addicted, there are many persons who, to their own ruin and the ruin of others, proceed too largely upon theoretic principles? What is the cause of this too-frequently observed failure, but that they extend principles beyond their legitimate limits, or strive to bend these to cases not sufficiently fathomed or seen to be unsuitable. Let no one suppose that we here refer to merely frivolous minds—to such as mimic the mental acts of the intelligent, as children do movements employed in the mechanical arts Men of no small powers of mind, times without number, fall into the error of applying limited principles to cases, the nature of which is but imperfectly determined, with such results as might be anticipated. In short, every ingenious theorist—and how fertile is every busy scene of life in such theorists,—every ingenious theorist, we say, who wastes his life and talents in striving to elicit by his theory (which, unless he be altogether a fool, necessarily contains some portion of truth or principle) a mode of producing some hitherto unaccomplished effect, boasts that he is directing the pursuit in which he has engaged by rational principles.

Many eminent men in all departments of science have held an erroneous course while pursuing a correct principle; because their knowledge of the circumstances which might modify that principle in special cases was still insufficient. This is exactly the difficulty in the adjustment of means to ends in all instances which possess the slightest complexity. Some great rule seems at first sight to be a sufficient guide to the end in view. But something, in appearance altogether unimportant, is omitted which mars the anticipated effect. And if this is liable to occur even when the complexity is slight, how infinitely are the chances of error multiplied when the complexity is of considerable extent! If numerous examples of this kind are to be met with in the history of physics—if in the the mere arrangement of mechanical contrivances, where the counteracting influences can seldom be otherwise than few, unexpected results have often been experienced, how must the risk of unforeseen consequences be augmented when the principles or rules to be applied concern the intricacies of morals, politics, or medicine? Thus what a stumbling block has so simple an interference as that of friction in mechanical results proved in times past even to the most accomplished masters in physical science? How long was it before so simple a question, as the amount of fluid which water pipes of a given diameter would yield in a fixed time, could be resolved, when the effects of friction had not been duly estimated? How short a time is it since, owing to the influence of friction being lost sight of, it was universally believed that a locomotive engine could not ascend an inclined plane? If there be any truth in these observations, how incumbent upon us is the precaution to examine well the extent of available principles, and the amount of precision or, so to speak, of definition in the occasions on which we are called upon to act, when the advice is tendered to us to proceed on rational principles.

What we have just said bears nearly on all the pursuits in which men engage; or, if there be any exception, it is only in the case of those which are purely mathematical; for even to physics, in which the properties of matter are mingled with those of space and number, these observations are not altogether inapplicable. They find their chief illustration, however, in those departments of human acquirement in which the rules or principles are less absolute, but admit only of the three degrees of confidence, known as possibility, probability, and moral certainty. There are many arts dependent on sciences, the principles of which fall under the three heads of evidence just referred to; and thus the rules of procedure in such arts claim no more than the corresponding degree of confidence. There is, moreover, a distinction of the arts into constructive and directive, which materially modifies the degree of certainty with which the rules or principles in each kind can bring forth an intended result.

"Some arts are constructive; others may be described as directive. In the constructive arts, the materials await the orders of the master-workman; so that, at his pleasure, the progress of the design may be stopped still some error is corrected, or some new facility given to the operations in hand. In the directive arts, the overseer is denied this advantage. He is concerned with a force or forces, which have an onward course—which he cannot put on or shut off at his pleasure."—*Edin. Med. Journal,* 1857.

From the many subjects upon which these generalities bear, we are about to single out one, which no doubt is already conjectured to be Medicine; and not to beg the question which we are about to discuss at greater length—namely, the narrow limits of scientific or rational Medicine, we will only premise that Medicine as a science, beyond all question, stands among those subjects of knowledge, the evidence of the principles of which is not demonstrative, but only possible, probable, or morally certain. Moreover, Medicine, as an art, is not a constructive but a directive art:—that is, an art in which an onward force is concerned which cannot be shut off at pleasure, and while a gauge is taken of the effects produced in the case by the proceedings already resorted to.

But from such generalities let us proceed to examine more closely what Medicine is both as a science and an art. To avoid embarrassment let us confine our attention for the present to the one principal end of Medicine, namely, the cure of a disease in an individual patient. From which of the numerous branches of knowledge subservient to Medicine are we to draw the rules or principles, and means or remedial agents by which the cure is to be set on foot? Not from anatomy, not from physiology, not from pathology; but from therapeutics, or that part of knowledge which teaches the operation of remedial agents on the living system, and their effect in the subjugation of diseases. Therapeutics, in so far as constituting a science, consist of certain principal —generalizations from facts—that is, from facts observed as to the effects of certain means or substances on the living body in health and disease. If then, it be from therapeutics that we derive all the rules and means of curing diseases, the science of therapeutics must be the true science of Medicine —all the other branches of Medicine being but subsidiary. To this proposition some may feel inclined to object; nevertheless, any doubt upon the point cannot for a moment be maintained. The certainty of curing a disease, after that disease has been ascertained is in proportion as it depends upon some acknowledged rule or principle in the science of therapeutics? Upon what else can the certainty of curing a disease depend? And if that be admitted, can any thing be called Rational Medicine but the certainty of curing a disease by some acknowledged principle or rule in therapeutics? Surely, then, if the cure of diseases be in any respect reducible to a science, that science must be identical with the science of therapeutics.

If then therapeutics be the true science of Medicine, how does it happen that so little pains is in our time bestowed upon the cultivation of this department? How does it happen that even those who are continually crying up Medicine as a science, and dealing contempt upon those who contend that experience is the only secure ground for its improvement, neglect therapeutics, and allow themselves to be wholly engrossed by pathological studies? There may be many reasons why this state of things prevails; but probably the most influential cause is the extreme difficulty of carrying therapeutic inquiry beyond the condition in which it actually is.

It is easy to discover the grounds of this difficulty. We have but to look at the kind of task which Medicine sets itself in undertaking the cure of disease. To cure a disease is to bring an individual frame of organism under such circumstances as shall favour its return from the state of deviation which has taken place to its original integrity of vital action. The precepts or rules by which this endeavour is made can, only to a very small extent, be drawn from the individual frame of organism, the rectification of some action or actions of which is the object set before the Physician at the moment. The precepts or rules by which almost exclusively he is to be guided are general precepts or rules drawn from the human species at large, and therefore certainly not applicable in the whole of their extent, to the individual organism which is the present object of his attention. It is one of the elements of his practical skill—that skill which he has acquired by long converse with diseases, and a personal experience of the many peculiarities incident to individuals—to be able to seize upon the modifications required to be put upon general rules in order to adapt them to the nice gradations of susceptibility to be found in each particular member of the human race.

Every precept or rule of Medical science, therefore, however exact its foundations, is limited in its use or application by the peculiarities which so undeniably abound in individual organisms.

It is not indeed to be denied that there are rules, or limited precepts, for determining the presence of some of the peculiarities in individual patients, such as require the modification of the general precepts which may, at first sight, seem to be applicable to the case. It may be conceded, for example, that the kind of assistance which the practical Physician obtains in the choice of his remedies, from what is laid down in theoretical works respecting the several circumstances of age, sex, temperament, constitution, and previous diseases, belongs to Rational Medicine. But with respect to the highly-important point of idiosyncrasy, what can Rational Medicine teach him? It may, indeed, recount what idiosyncrasies have been recorded in past times; but what but his own experience can inform him of the exact idiosyncrasies which belong to the patient who at the moment is under his care?

The so-called principles of Medicine, when they do not rest on possibility or probability, have, at the utmost, the force of moral certainty. Such principles are applicable to an art, which, not being constructive but directive, does not admit of any retracing of steps or successive trials of effect. Whatever is already done is beyond recall. How little room, then, is there for the rational in the application of such rules! It may well be doubted if the generalities of Medicine be at all entitled to the name of principles. If that name be conceded to them, they are principles which of all known principles come the least up to the just idea of principles.

When a principle is perfect, any one of all the facts falling under it may be deduced from it, altogether independently of the further evidence of experiment. For example, from the principle that the same amount of matter at the same distance from the earth's centre has always the same gravity, how many thousand facts are deducible which, without any new evidence, have the force of demonstration. If a metal heated in a given quantity of atmospheric air, acquires weight, it is known, beyond doubt, without any further trial, that the weight which the metal acquires is exactly the same as that lost by the atmospheric air. If a given quantity of sulphate of baryta be heated with charcoal, the weight of carbonic acid produced indicates at once how much oxygen the sulphate of baryta has lost, or gives the proof that the sulphate is thus changed, not into a sulphuret of baryta, but into a sulphuret of barium. If a given measure of water absorb a gaseous body—say ammonia—and the same measure of the new compound is found to weigh less than that measure of water, it is demonstrated, without further proof, that the water has expanded in the operation.

Again, if the exact relation between the length of the column of mercury, and the length of the column of water, which the atmospheric pressure supports respectively in a vacuum be ascertained, the specific gravity of the mercury is inferred with absolute certainty—since a given bulk of mercury is as many times heavier than the same bulk of water, as the column of water is longer than the column of mercury, Or if the specific gravity of mercury be first known by some other means, and also the length of the column of mercury supported in a vacuum by the pressure of the atmosphere as in the barometer, then the length of the column of water supported *in vacuo* by the atmosphere is inferred with certainty, because the column of water so supported is as many times longer than the column of mercury as the mercury is heavier than the water. Further, if it be found by actual trial that a column of mercury standing on a square inch and rising to thirty inches, weigh nearly fifteen pounds, then it is inferred with certainty that the equivalent column of water rising to between thirty-three and thirty-four feet, and standing on a square inch, equals the same weight, or nearly fifteen pounds, and that the equivalent column of the air, resting on a square inch, and rising to the utmost limit of the atmosphere has also a weight or pressure of nearly fifteen pounds. But to take an example of a different character:—If water by means of certain manipulations be cooled down to 20° F. and then freezes, the thermometer in the water at the moment of freezing rises to 32° F. Again, in a second experiment, if the water be cooled down to 10° F. and then freezes, the thermometer in this case also at the moment of freezing rises to 32° F. which seems at first sight paradoxical, and as if the more heat were taken from the water, the more it can give off. But there is no difficulty ; since the freezing of the water is here the source of the heat by which the thermometer is raised in both experiments, it may be certainly inferred that more ice forms in a given time in the case where the water was cooled down to 10° than in the case where it was cooled down only to 20°; so that the source of heat is larger in the experiment in which the previous cooling was greater.

And it would be easy to multiply examples of principles of this degree of certainty in physical nature ; but when we turn to the so-called principles concerned in any part of the treatment of diseases, there is absolutely nothing of such a kind to be met with. Even rules in which number or quantity is concerned, occasionally fail us. In dropsy of the abdomen a cord is sometimes employed to measure the girth of the trunk of the body at a certain height on two successive days ; and if the girth be less on the second day than on the first, it is probable that the disease has decreased. Yet even this is not beyond doubt ; for the change may not have arisen from the decline of water in the cavity, but from a diminished distention of the bowels by flatulence. Again in dropsy the urinary secretion may have considerably augmented under the use of diuretics. This is a probable sign of the disease having diminished. Yet it is not certain; for unless many physiological experiments are fallacious, the increase of the urine may not be due to absorption from the cavity affected by dropsy, but to the absorption of fluid from the atmosphere by the skin, or by some other channel.

It may be urged on behalf of the claim of Medicine to be essentially rational, or a true science, that hardly anything can have more of the character of a principle than the effect of certain substances to cause vomiting, certain other substances to cause purging, certain other substances to act as diuretics, certain other substances to cause sweating, and so forth. It is not to be denied that the known effect of such substances to act with much certainty in these several respective modes, constitutes a most important series of principles. But these principles are but remotely concerned in the great object of Medicine, which is not merely to cause vomiting, or purging, or sweating, but to cure diseases. For it unfortunately happens that when such more immediate principles are laid down as that emetics cure such and such diseases, purgatives such and such other diseases, and sudorifics various additional diseases, the rule or precept is found to go but a very short way, and, under every variety of circumstances, to prove an entire failure. Not that it is here denied that such principles sometimes turn out to be well founded; for it is to be remembered that what is here contended for is, not that medicine is not in some degree rational, but that it is rational only to a very small extent.

With respect also to the order of specifics it may seem that the employment of these, in the treatment of diseases, belongs to rational Medicine. Nor should this be denied: yet the admission will not make a great addition to its extent. In so far as such an order of remedies can exist, it cannot be established on any general principles supplied by physiology or pathology. It must rest exclusively on a minute experience in the actual treatment of diseases. This is the only way in which, according to the views here contended for, rational Medicine can arise; and therefore, among other reasons, we do not dispute that an order of specifics, if it can be so constituted, should belong to rational Medicine. At the same time to decide thus is a concession rather than a necessity of the case. For if it were our purpose to affirm that there is no such thing as rational Medicine, and that all Medicine is empirical, there would be nothing illogical in refusing to place an order of specifics under the head of that description of Medicine. Further the concession is to be made for the sake of convenience, and because we do not dispute the existence, but only the extent, of the rational in Medicine. A specific is to be regarded as falling under rational Medicine, because it is conceived to be applied by an exact rule when a certain disease has arisen. Yet it is surely only by courtesy that this can be called a principle; nor is the rule here greatly more absolute than the case in which a remedy, on the ground of former experience, is made use of at a particular stage, or under certain conditions, of some one disease. In short, as specifics have the semblance of rational remedies, it is not worth our while, for any purpose which we have at present in view, to attempt to deprive them of that character.

In recent times the order of specifics has very much declined in number. Sulphur in scabies, cinchona in intermittents, mercury in syphilis long stood their ground against all attempts to disperse the order of specifics. In respect to these what is now the state of the case? Has sulphur ceased to be a specific because it has become a truly rational remedy in scabies? If but a few years ago the question had been asked, why is sulphur prescribed in scabies?—the nearest approach to rationalism in the answer must have been — because experience has established that sulphur destroys the virus by which the eruption is maintained. But this manifestly is the same thing as to say, sulphur has the specific property of destroying that virus. It can now be truly said—sulphur is to be used in scabies because it kills the acarus scabici on the presence of which animalcule the disease depends. Here the remedy is used on a rational ground previously established by experience. Thus if sulphur had never been employed until it had been discovered that scabies owed its existence to the presence of a species of acarus, and that sulphur could kill that animalcule, then the first employment of sulphur in practice for the cure of scabies would have been a perfect example of rational Medicine. It is no longer necessary to retain sulphur in an order of specifics, though it unquestionably owes its efficacy in this respect to a specific quality.

Cinchona is found not only to cure Intermittent Fevers, but to exert a curative action in diseases generally which have an intermittent character. Other substances are observed to possess this property of curing diseases exhibiting an intermittent type. Hence cinchona is taken from the old order of specifics and placed with arsenic, sulphate of bebeerine and some others in the new order of antiperiodics. The order of antiperiodics is not deducible from any facts or principles in physiology or pathology, but purely from the observations of experience in the treatment of diseases; nevertheless when this order has once been so established, to single out one of the order for use in an intermittent form of disease is undoubtedly an exercise of rational Medicine. It is more decidedly an instance of rational Medicine than the choice of a medicine out of the order of purgatives, or one out of the order of diuretics to augment the movement of the bowels or the activity of the kidney; because such effects in general contribute only indirectly to a cure, whereas it is the direct property of an antiperiodic to put a stop to the disease. To prescribe an antiperiodic is to bring an established principle into use. Thus in so far as the order of antiperiodics has appropriated to itself remedies from the order of specifics, it has unequivocally extended the narrow limits of rational Medicine.

If again with the purpose of removing mercury as an antisyphilitic from the order of specifics it be asked—why it cures syphilis? the answer probably will be, because mercury has the property of destroying the poison by which that disease is generated and maintained. If this answer be believed to refer to an established point of fact, then mercury is properly removed from the order of specifics and pronounced to be in truth a rational remedy. And if iodine can be proved to cure syphilis on the same footing, then there will be room for the restoration of the old order of *Alexipharmics* or destroyers of poison.

But while it is thus possible to put an end to the old order of specifics by giving a more or less rational view of their mode of action, it is not to be forgotten that the special virtue to which respectively their efficacy is attributable, is uniformly a discovery of experience in the actual practice of medicine, and not the result of any new discoveries in physiology or pathology.

Again if we wish to render Medicine more and more rational, the last thing we should do is to cast away the study of the special endowments of remedial agents; and it is not impossible that farther exact investigation by minute experience of the properties of such agents may re-establish an order of specifics on a far larger scale than that which has just been overthrown. It is certain that one of the improvements which must follow a diligent inquiry by experience into the properties of drugs is a more intimate acquaintance with their special virtues; and if it should so happen that there is not at the same time discovered some rational connection between such special virtues and the special benefit derivable therefrom in the cure of diseases, there can hardly be any other course left open but to throw them into what will be at least a provisional order of specific remedies.

There can be no doubt that every substance which can be employed as a medicine has a specific action on the living system. Every such substance has for the most part certain modes of action to a great extent common with those of several or of many other substances; so that it can be grouped with those into an order characterised by the common properties. But however analogous the action of one substance on the living system may be to that of another substance, these actions are never identical. Whence it follows that of two remedies the one is never the complete and perfect substitute for the other. Here then is a large field open for investigation; but that investigation must be conducted exclusively, or nearly exclusively, under the guidance of experience and at the bedside of the patient.

But it must also be confessed that the same substance as nearly as possible under like circumstances does not uniformly produce the same effects on the living frame. The numerous particulars which constitute the differences between different organizations, apparently under the same conditions, render the effects even of one substance unlike at every new occasion of its trial. Hence absolute specificity is almost unknown in the living world. How essential is it in the treatment of diseases to keep these irremedial differences in the effect of the same substance and still more in the effect of different, though allied, substances constantly before the mind! How dangerous is it to regard Medicine as an art governed by causes certain in their effects like the effects of physical causes on inanimate matter! To a patient in common fever affected with sleeplessness give within a short period the same amount of opium which hardly produced any disturbance in tetanus or delirium tremens, and what will be the results! To a patient labouring under inflammation of the bowels give the same amount of tartar emetic, which had produced nothing but good in pneumonia, and what will be the result! There are some men too blind to see the mischief they produce. Their coarse perception of diseases confounds all nice distinctions. They have one remedy for every one of their so-called diseases. It never fails in their hands; for they are as blind to the causes of death as to the nice distinctions of diseases. They blunder on, content if their remedy, whatever it be, produces a sensible effect—purges, if it be a purgative; affects the amount of urine, if it be a diuretic; causes full vomiting if it be an emetic—but are never able to see if what they are doing conduces to the safety of the patient. He must go through their ordeal If he be strong he survives—if he be weak, the grave tells no tales.

Of the departments of human knowledge which run parallel with Medicine, agriculture is one between which and Medicine there exist very decided analogies. Nevertheless, the history of the cultivation of each of these two branches of knowledge is found to exhibit a remarkable contrast to the history of the other. Medicine has been from its very earliest foundations prosecuted on so-esteemed rational principles; while, until quite recently, agriculture has rested almost exclusively on foundations of experience. Nevertheless, it is probably true, that agriculture, at this moment, has attained a more truly scientific position than medicine. In short, it seems no longer a subject for doubt that the Agriculturist may act to a far larger extent on rational grounds in the operations necessary for rearing his crops, than the Physician can do in the measures he takes for the cure of diseases.

It was long before just notions began to prevail as to the relation between the vegetable kingdom and the so-called circumjacent elements—air, water, earth, and warmth. For ages upon ages the exhaustion of the soil by the growth of plants was a fact, sufficiently recognised indeed, but which admitted of no explanation. The ancient world did not reach the idea that plants feed on their mother earth in any other but a figurative or poetical sense. The modern world of agriculturists long regarded the productive properties of soils as attributable to certain so-called occult qualities. In this belief they were perfectly right; but their error was that they remained content with this belief and made no effort to discover in what these occult qualities consist. The discovery of the composition of the atmosphere was the first step towards converting the old dogma of occult causes into a manifestation of light. When it was observed that the oxygen of the air, so essential to animal life, and so largely destroyed by the animal kingdom was resuscitated by growing plants, the right path had been already struck. Nevertheless it was years before even men of science in general could make so large an onward step as to believe that plants feed on the carbon which they take from the carbonic acid of the atmosphere so copiously produced at all times by animals. And even after it came to be generally admitted that the carbon of the vegetable kingdom is derived jointly from the atmosphere and the soil, it still remained a question in what the fertility of soils consisted; for it did not appear that there could be much difference in the degree in which opposite kinds of soil should furnish carbonic acid. Here there was a great stumbling block. The difficulty was to believe in the capability of soils to afford to plants the saline matters which are found in their ashes after combustion. At the beginning of this century De Saussure stood almost alone as the unflinching advocate of what has proved to be the correct view of the matter. His opponents could not understand how such substances as potash and the phosphates of several bases should exist so extensively in the soil of the earth as to be, in a chief measure, the source of its fertility in respect to different kinds of crops. They did not sufficiently appreciate the fact that potassa, although styled the vegetable alkali, exists widely spread in minute proportions throughout the common rocks by the crumbling of which the mineral part of soils are formed; or that the same is true of the phosphates. Nearly sixty years ago De Saussure exclaimed, "Analysis demonstrates that all the prevailing substances in the ashes of plants are contained in the soil; and that its soluble part, which alone penetrates into the vegetable economy, contains those substances in greater proportion than the insoluble part. The explanations (he continues) which I can give on this fact are sometimes far from being perfectly satisfactory. These often require a knowledge which I have not attained—that of the vegetable organism. But they are less absurd than those which ascribe to plants a creative power as respects their elements." (*Recherches Chimiques. Paris,* 1804.) Nevertheless the absurd view to which he refers was taught by Schrader and Branconnot at that time, and seems for a long time after to have held possession of the minds of chemists and naturalists.

And although doubtless many had begun in process of time to adopt the opinions of De Saussure, it was reserved for Liebig, in our own days, to astonish the world by the announcement of views which at once placed agriculture on the footing of a complete science.

Let it not be imagined that in this statement there is any idea involved of agriculture being superior to Medicine. Relative to this two things in particular are to be borne in mind, namely, that agriculture has borrowed very much from sciences owing their advancement to their subserviency to Medicine ; and that agriculture is not required to deal with the preservation of every individual of the crop which has come into existence, but only to take care that an average number of the individual plants shall be brought to a healthy maturity. In short, that agriculture corresponds rather to public hygiene than to the practice of Medicine.

In agriculture there is one great scientific principle from which its several rules are deducible under the guidance of experience ; namely, that there is a strict identity between the peculiar chemical composition of the crop, and the peculiar chemical composition of a soil which affords such a crop in abundance. To preserve this strict identity of chemical composition between the soil and the crop, which it is the object of the agriculturalist to raise in abundance, is the foundation of his rules,—if there be a failure in this strict identity of composition, there will be a failure of the crop.

Is anything analogous to this great principle in agriculture to be discovered in Medicine ? There is one analogous principle which, by being diligently prosecuted, may be destined to render Medicine in a far higher degree rational than it has ever attained to in its past history. That principle is the strict identity between the chemical constitution of the food and the chemical constitution of the organism of the living frame. It appears to be a necessary corollary from the acknowledged principle that a deviation from health is a deviation in some part of the organism from its just chemical constitution—that health in each living individual consists in a complete conformity of all the constituent textures and fluids to the due standard of chemical composition; and when a deviation from this standard has occurred, that the restoration of the parts in fault to their chemical integrity is to cure disease. Thus, according to this view, all remedial agents are subservient to the appropriate direction of dietetic means. There can be little room for doubt that Medicine is hereafter to be cultivated in conformity with this principle. But it by no means appears from anything hitherto ascertained how far even the successful application of such a principle is capable of rendering the ordinary practice of Medicine to a very large extent rational.

It will, indeed, be contended by some enthusiastic Physicians fresh from the schools, that modern chemical pathology has, to a great extent, placed medicine upon a scientific basis, even as respects the use of therapeutic agents. They will say :—look to the many antidotes to poisons which chemistry has pointed out :—look to the certainty which chemistry has introduced in respect to the use of remedies for calculous diseases :—mark the effects of alkaline remedies against the uric acid diathesis and that of such acids as the nitric and hydrochloric against the phosphatic diathesis. Again they will urge the vast importance of the discovery, by chemical means, of the characteristic symptoms of granular disease of the kidneys—the coagulability of the urine, its low specific gravity, the defect of urea. They will dwell upon the important connection observed between various forms of disease and the several descriptions of casts of the urinary tubes; as between the epithelial cast consisting of fibrine entangling epithelium and blood corpuscles, with acute desquamative nephritis, a not uncommon consequence of scarlatina; as between the granular casts composed of fibrine with particles of disintegrated epithelium, frequent in the urine of those who, after many attacks of gout, are threatened with chronic desquamative nephritis; as between the waxy casts and acute primary disease of the kidney; as between the oily casts and fatty degeneration of the kidney; as between the purulent casts and suppurative nephritis; as between the blood casts and hæmaturia of the kidney, so distinguished from hemorrhage of the bladder. They will point to the great facilities afforded by scientific means for the exact analysis of morbid urine as respects urea, uric acid, phosphates, oxalates, urates, hippuric acid, cystine, chyle, fat, milk, sugar, oil, kiesteine, blood. They will call upon us to acknowledge the astonishing progress of scientific manipulations for the more perfect analysis of the blood in health and disease:—they will challenge us to dispute the great utility of the knowledge that the red particles are in excess in plethora, and in defect in anæmia; that they are more slowly reproduced than the other constituents of the blood, so as to explain the long continuance of the pallid countenance after hemorrhages; that the fibrine is increased in acute inflammations, particularly of serous membranes, in acute rheumatism, in pneumonia, phthisis, erysipelas, cynanche tonsillaris and inflammations of the lymphatic vessels; that the greatest increase takes place in acute rheumatism, and that there is also a great increase of fibrine in pregnant women:—further, that the quantity of fibrine is diminished in non-inflammatory fevers, in cerebral congestions, in scurvy, in profuse hemorrhages and in inflammations of the mucous membranes:—moreover that the quantity of serum augments as the clot diminishes; that the quantity of water increases as the more solid ingredients decrease:—that the water is in excess in anæmia and in chronic diseases attended with debility:—also that the quantity of albumen nearly equals that of the fibrine, but that it is greatly diminished in Bright's disease; and that the salts of the serum are of unusually small proportion in typhoid fever and cholera. They will add, perhaps, that there is uniformly free alkali in the blood, and that by its means the chief constituents of the blood are kept in their fluid state; that the extreme facility with which the blood moves through the minutest vessels is due to the small degree of permeability of the walls of these vessels for the alkaline fluid:—that the free alkali acts as a resistance to many causes, which, in the absence of the alkali, would coagulate the albumen:—that the more alkali the blood contains, the higher is the temperature at which its albumen coagulates; and that, with a certain amount of alkali, the blood is no longer coagulated by heat:—that on the alkali depends a remarkable property of the blood, that of dissolving the oxides of iron, which are ingredients of the colouring matter of the blood, as well as other metallic oxides, so as form perfectly transparent solutions.

We are far from representing that we have exhausted the catalogue of scientific improvements in Medicine of a recent date which the enthusiastic partisan of the rationality of Medicine would cite in behalf of his views. We have given merely a small specimen, yet large enough we fear to try the patience of the unbiassed reader. We admit in the fullest manner the vast importance of such discoveries as we have supposed would be referred to by an opponent. But we deny that these bear upon the point at issue otherwise than in a very trifling degree. The question at issue is:—in what degree the treatment of diseases at present rests upon rational grounds? What we contend for is, that it rests only in a small degree upon rational grounds, and that the extension of rational Medicine must proceed onwards with extreme slowness. We admit that in the particulars above referred to (and the enumeration, we think it will be allowed, contains the chief important additions made of late by Chemistry to Medicine) there are some examples of the rational treatment of morbid conditions. But we must premise this:—that the instances we are going to concede, do not at all warrant the idea entertained by some, that the progress of organic chemistry already holds out the promise of an immediate era of rational Medicine founded upon chemical pathology and treatment. And here it may not be out of place to recal the remembrance of a former era of so-called chemico-medical rationalism by which the existence and repute of the old humoral pathology were prolonged long after it was thoroughly worn out, in the vain hope of placing its foundations anew upon the principles of the then infant science of chemistry. We admit, then, that it is rational treatment to prescribe magnesia and chalk against the poisonous effects of the mineral acids, or rather of the sulphuric, hydrochloric, and oxalic acids; to prescribe weak acids and bland oils against the pure alkalies and their carbonates; to prescribe white of eggs against corrosive sublimate; to prescribe sulphate of soda or sulphate of magnesia against the chloride of baritum, chloride of calcium and the soluble salts of lead. We admit also that it is rational treatment to prescribe alkaline remedies in uric acid diathesis, and the nitric or hydrochloric acids in the phosphatic diathesis; also to prescribe alkalies, chalk and magnesia in affections of the stomach and bowels connected with the presence there of acid acrimony; nor less to prescribe iron in anæmic diseases. These several modes of proceeding have nothing to do with chemical pathology, being all, except the last mentioned, obvious applications of facts in inorganic chemistry common to Medicine and to a thousand other arts. If the use of iron as a remedy in anæmia had been suggested by the discovery of that metal in healthy blood and the defect of it in anæmia, there would have been room to boast of a step in the progress of rational Medicine. But unfortuately for this triumph it is recorded that three thousand years before iron was discovered in healthy blood Melampus cured Iphicles of impotency by making him swallow the rust scraped from a sword which, by the guidance of a kite, he found concealed in a hollow tree.

With respect to the facts supplied by scientific means, in regard to the changes of the urine in certain diseases, there can be no question of their vast importance as pointing out the exact diagnosis of maladies before confounded with other maladies. But it is to be observed that after these before undiscriminated maladies are made manifest, the appropriate treatment has to be discovered. Science here has an indirect effect; but it is to experience that we must look for a proper mode of applying the remedies, if any available shall be discovered.

In regard to the changes in the proportions of the constituents of the blood in various diseases, no line of discovery can be more highly prized: but the same reply is also to be made to this argument, namely, that while such knowledge serves for the more exact discrimination of allied morbid states, it does not supply a principle upon which the requisite treatment can be founded.

While then we continue to maintain that there are in the whole of Medicine very few exact principles or scientific truths from which the particular details of treatment in diseases can be deduced in the same way as particular facts are inferred with certainty from principles in physical science, we at the same time admit that there are numerous axioms and precepts of a general kind which have accumulated in the course of ages, the effect of which is to guide our treatment so soon as it has been discovered that a particular kind of general health attends a certain train of symptoms. If there be a uniform connection between that train of symptoms and the kind of general health in question, then these axioms and precepts are almost upon the footing of exact principles ; and in proportion as any train of symptoms brings with it a definite kind of general health, in that proportion do such axioms and precepts stand instead of principles. And the plain reason why epidemics are so uncertain in their treatment is because the same train, or nearly the same train, of symptoms sometimes is found with a depression, sometimes with an exaltation of the general health.

Let no one suppose because it is here contended that Rational Medicine has in our time very narrow limits, that the unspeakable benefits which would result from Medicine being to a great extent rendered rational is denied. Nothing is more earnestly to be desired than that Medicine should be made rational to the fullest extent that is conceivable. But nothing can be more mischievous than to believe that the practice of Medicine can be conducted on rational principles (while in the nature of things that is impossible) merely because it is heartily to be wished that Medicine should reach such scientific eminence.

Still less let any one imagine, that while it is here insisted upon that the practice of Medicine is governed, in by far the largest measure, by experience, it is to be understood that to make a skilful Physician nothing more is necessary than that he should be a practical man familiar with sick chambers. A Physician must be trained in science, although it is not by science principally that he is to treat diseases. And in what is now about to be said, it may appear that in most of the disputes carried on by Medical Men as to the respective merits of science and experience in Medicine there is really no difference of opinion—inasmuch as each party is apt to look at the question in debate from a different point of view. For there are, in truth, but few in the Profession who really act on the assumption that Medicine—meaning by Medicine the treatment of diseases—is for the most part rational. Nevertheless there are some,—and most dangerous instructors they are when they obtain the confidence of the young and inexperienced.

But let us turn our attention for a moment to the circumstances which lead so many members of the Medical Profession, without having imbibed radically erroneous views, to insist that Medicine is essentially rational and scientific. And, first of all, what was said before must be here repeated —namely, that the science of Medicine, in so far as it is a science, or is hereafter to become a science, is the science of therapeutics—and not anatomy, physiology, pathology, or chemistry; that is, that the immediate object of Medicine is to cure diseases; and therefore Medicine is a science, or is rational just in proportion as it affords rules or principles from which a certain method may be deduced of removing any deviation from the integrity of health which may have been discovered to have taken place in the living system. And it plainly is because this immediate object of Medicine is not kept steadily in view, and because the mind naturally runs away with the undoubted fact that several true sciences are subservient to Medicine, that Medicine proper, or the cure of diseases, is rashly pronounced to be in a high degree scientific. The true state of the case manifestly is that many most important sciences are subservient to Medicine; but that hitherto Medicine proper, as a science, lies within very narrow limits.

In the old language of the schools, the theory or science of Medicine consists of physiology, pathology, and therapeutics. We shall be told, perhaps, that the practice of Medicine includes the diagnosis and prognosis of diseases; and that since physiology and pathology—two unquestionable sciences—are subservient to diagnosis and prognosis, the practice of Medicine is, therefore a department of science. There is no other objection to this mode of viewing the subject except that, while it has no practical tendency, it serves to perpetuate the confusion which hangs over the subject, and prevents the mind from reaching at once the only important question at issue; namely, the extent to which principle is applicable to the immediate removal of a disease.

But while Medicine proper is but to a small degree scientific, the Physician must not be in a small degree only, a man of science.

Physiology, in its full extent, is the science of living Nature in health and disease. Physiology is the Physician's science. It is the progress of Physiology which has brought Medicine to its present state of advancement. If it be said that there are many good practitioners who are not good physiologists, the answer is, that these men have picked up by tact, at second hand, what the great masters in the science of Medicine discovered through their acquaintance with living Nature. The great use of the knowledge of physiology—of the acquaintance with the order and the course of living Nature—is to render experience available to the improvement of medical practice.

Children, savages, and many wholly uneducated people, have usually a surprising turn for minute observation, as to the peculiarities of the individual things brought by chance under their notice. This natural kind of minute observation was doubtless of the greatest utility in the earliest stages of Medicine. And what is called the education of the senses should not be neglected in any one who is designed for the Medical Profession. But this is not the kind of experience which is most needed for the advancement of true Medical knowledge. When the use of some substance or method during the presence of a disease is followed by the cure of the disease, the true medical observer is the person who pronounces the truth, namely, whether the disease has ceased because that substance or that method was used, or that it would have ceased whether that substance or that method had been used or not.

There can be no doubt of the extreme tendency among men, educated and uneducated, to ascribe any event which strikes their senses for the first time to the most prominent event or circumstance as its cause which preceded that event. Let the metaphysician determine whether this tendency be an original part of man's mental constitution or something superadded according to a certain law. The existence of this strong tendency among men is all that concerns us at present. This strong tendency is manifestly the foundation of the practice of Medicine. But, unfortunately, it is not only the foundation of the practice of Medicine, and of the useful arts in general, but it is also the foundation of all that is most absurd in the history of human beliefs—of divination, astrology, sorcery, witchcraft, as well as of the absurd remedies to be found in the ancient catalogues of the Materia Medica. It would seem that every intelligent person has an intuitive tendency to connect any two events in immediate proximity of succession as cause and effect unless he previously knows the contrary, or unless he has seen reason to conclude from previous knowledge that the cause of the occurrence presented to him belongs to some different order of casual agencies. Hence the use of education at once appears in the determination of the connection of cause and effect in cases of the complex character which belong to the practice of Medicine. The more a man knows of the intimate character of physiological nature, the less likely is he to be imposed upon by the fortuitous concurrence of two events having no real link such as that of cause and effect between them. Thus many sciences are usefully subservient to the education of the Physician. It cannot be said that a man's natural sagacity, independently of education, will prevent his running into errors of this kind; or if he run into such inadvertently, will prevent him from continuing in them. That argument is indeed true as respects many naturally sagacious people in the humbler arts; but it can have no place in Medicine, at least as a general rule. When the inference which a man has made refers to phenomena falling frequently under his notice, he quickly obtains the means of rectifying the errors into which the determined bias of his mind to regard phenomena as existing in the relation of cause and effect unceasingly leads him. But when the phenomena concerned are of a rarer occurrence, complex, or seldom arising under exactly the same form, like the major part of the phenomena in the practice of Medicine, when the course of error begins. Under such circumstances the uninstructed mind, however sagacious, has no guard against error. It falls a willing prey to its inherent tendency to interpose this relation between successive phenomena.

Doubtless it is a severe trial to the young mind to abstain from the persuasion that the measures taken for the cure of a disease are not founded upon some exact principle; and it is perhaps impossible for a young Physician not in some degree to overstep the limits within which we would restrain the so-called rational Medicine. At the same time we would remind him that what we ask is not that he should desist altogether from theorising, but that he should not theorise on the subject of therapeutics and the remedies for disease. The fields of Physiology and Pathology are open to him, at least to a far greater extent. In those fields he may exercise his talent for the rational, and often, not only without injury, but with the greatest promise of advantage. If he at the same time read the history of Medicine in a proper spirit, he will find less difficulty in adopting the advice which we sincerely tender to him. When we say that a young man should strive to read the history of Medicine in a proper spirit, we wish to be understood to say, that he should read it so as to become satisfied how vain have been the efforts of the greatest ornaments of the Profession to render Medicine rational, without imbibing, what so remarkably characterises some of the smaller men of the present age, a contempt for the labours of the medical worthies of past times. For there is hardly any greater evidence of the unfitness of a man's mind to achieve greatness in medicine than a belief that the present time engrosses all that is splendid in the Profession, and that it is nothing but an empty glory which belongs to the great ones of former generations.

Finally, our conclusion is, that, while Medicine rests wholly on experience, the Physician is incapable of benefiting by experience until he has become largely conversant with the subservient sciences.

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The following are the principal objects to which the attention of the Association shall be directed.

I. The cultivation and promotion of the Science and Practice of Medicine and Surgery.

II. The public interests of the Profession, and the legislation thereon.

III. The internal regulation of the Profession, and the intercourse of its Members.

IV. Medical Police and questions affecting the public health.

V. At the evening meetings the improvement of Professional knowledge by reading original papers on subjects connected with Medical and Surgical Science; by the exhibition of Anatomical drawings, preparations and specimen, morbid and natural.

CONSTITUTION OF THE SOCIETY

The Society shall consist of honorary, corresponding, and ordinary Members,—the ordinary Members to pay £1 1s. annually. The Officers of the Society shall be elected from the ordinary Members, and consist of a President, a Vice-President, a Treasurer and Secretary, and three Members, who shall constitute a Council, under whose management the affairs of the Society shall be conducted.

LAWS OF THE SOCIETY.

I. That the President, Vice-President, and Secretary be elected annually; that the President and Vice-President be not eligible for re-election until after the expiration of one year.

II. All Members of this Society must be registered Practitioners.

III. Applications for admission into the Society, shall be made in the form annexed, and delivered to the Secretary. Candidates shall be elected at the second meeting subsequent to such application, the votes of a majority of the Members present being required for the election of a Candidate.

IV. The duties of the President,—to preside at all the Meetings and to regulate all the proceedings of the Society and Council, to put questions both in the affirmative and negative, according to the sense and intention of the meeting.

V. The Secretary shall attend all the Meetings of the Society, Council, and Committees; he shall record the business, and conduct the correspondence of the Society, he shall report donations and contributions, announce the names of Candidates for admission, inform Members of their election, keep the books of the Society, and prepare under the authority of Council the Annual Report.

VI. The Meetings of the Society to be held once a month, at the residence of one of its Members, the chair to be taken at eight o'clock throughout the year.

VII. A special meeting of the Society may be summoned at any time by three Members of the Council, or by the requisition of any five Members of the Society.

VIII. A notice of every meeeting, and of any special business to be transacted thereat, shall be sent by the Secretary to all the resident Members, three days at least before the day of meeting.

IX. No rule shall be made, altered, or erased, except at a meeting specially called for that purpose; and one month's notice of any intention to do so shall be sent by the Secretary to every Member of the Society.

X. Doubts about the meaning of any rule to be decided by the President.

XI. That the annual subscription to the Society be one guinea, to be paid in advance on the first of January in every year.

XII. The Council shall have power to act on behalf of the Association at such times as the President and any two of its Members shall deem expedient; three constituting a quorum. The Council shall arrange all matters of business for the annual Meeting. They shall recommend at least one Member whom they may deem eligible to be elected President for the year ensuing; and also at least one Member whom they may deem eligible to be elected Secretary; they shall prepare a report of the proceedings of the Association during the past year, and make any arrangements they may consider calculated to promote the interests and welfare of the Association. The Council shall have power to fill up provisionally any vacancy in their numbers between the annual meetings.

XIII. Members may introduce any Professional friend non-resident in Southampton.

XIV. The annual subscription of £1 1s shall be expended in the purchase of books, the weekly and quarterly Medical and Surgical periodicals, and in such other manner as the Council may decide.

XV. The Lancet and Medical Times to be kept one clear day, (Sunday not to be counted as a day.) Any Member detaining it beyond the specified time, to be fined one penny per diem.

XVI. That Members in the Country be allowed to keep the Weekly Periodicals three clear days, and be subject to the fine of one penny per diem for further detention.

XVII. That Members in Town keep the Quarterly Periodicals three clear days, Members in the Country seven clear days, to be subject to a fine of one penny per diem, for further detention.

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